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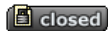
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01-15-2004, 05:12 AM

#1

[wolfman](#)

Super Member
★★★★★



Join Date: Jun 2002
Location: Texas
Posts: 12,066

[wolfman's Photos](#)

S-Series Manual Transaxle Removal

CAUTION! I am NOT a technical manual writer. That being the case, I may have left a thing or two out of these instructions unintentionally. PROCEED AT YOUR OWN RISK! If you run into an unexpected or unmentioned item or problem, STOP!, and ask for assistance from someone experienced and/ or from the board!

91'-02' Saturn "S" Series manual transaxle removal

WARNING this is a VERY involved undertaking!

You will need:

GOOD set of jackstands

Floor jack

Set of metric wrenches and sockets INCLUDING a 30mm HEAVY DUTY Socket for the axle shaft nuts.

Torque wrench

LARGE (3ft) pry bar

2- 3ft 2"x 4" boards and either 2 approx 2 foot lengths of STRONG rope, steel cable or chain with "hooks" on the ends.

Replacement cotter pins for ball joints and tie rod ends

Ball of STRONG twine, couple of coat hangers

PROCEED AS FOLLOWS:

- 1.Remove the hubcaps or mag centercaps of both front wheels and LOOSEN but DO NOT REMOVE the 30mm axle shaft nuts
- 2.CHOCK THE REAR WHEELS AND SET THE PARKING BRAKE
- 3.Raise the front of the car and support it on jackstands (DO NOT place the jackstands in contact with the engine cradle!) You want to get the FRAME of the car 16 inches MINIMUM off the ground.
4. Remove the battery, battery tray, air filter housing and air intake snorkle.
5. Remove the coil packs and DIS module as an assembly
6. Disconnect the shifter cables from the transaxle shift tower and retention eyelets and lay the cables out of the way toward the firewall. Disconnect the VSS and reverse light connectors from the transaxle. Remove the reverse light switch from the shift tower.
7. Remove the three bolts holding the exhaust manifold to the exhaust downpipe, allow the pipe to drop down. Remove the rubber straps holding the exhaust pipe to the hanger back by the catalytic convertor and allow the pipe to hang down. You DO NOT need to remove the pipe, BUT if the pipe is connected to the underside of the car by a ridged hanger (some are, some aren't) you'll need to remove the bolts connecting it to the hanger so it will "sag" down..
8. Remove the NUTS holding the battery ground cables to the upper bell housing bolts and remove the cables/wires
9. MAKE SURE the clutch master cylinder is FULL to within 1/4 in of the top. TIE UP the clutch pedal to the steering wheel. Remove the two nuts securing the clutch slave cylinder to the bell housing. Rotate the slave cylinder counterclockwise about 1/2 turn and pull it out of the bell housing. Tie it up out of the way with some string BUT NOT HIGHER than the master cylinder!
10. Remove the wheels and inner wheel well splash guards
11. DO THIS ON BOTH SIDES. Remove the brake caliper (DO NOT disconnect the brake line!) and hang it out of way on a coat hanger. Remove the tie rod end nut cotter pins and nuts, then drive the tie rod out of the knuckle with a hammer and a block of wood used to protect the threads on the tie rod end. Remove the ball joint cotterpin and nut. Place your 3ft pry bar OVER the lower control arm and UNDER the engine cradle, BE CAREFULL not to damage the ball joint rubber grease seal boot. Press DOWN on the lower control arm with the pry bar and rap sharply on the SIDE of the KNUCKLE where the ball joint goes through. The ball joint will pop out DOWNWARD with the control arm, pull the strut/knuckle assembly outward slightly to prevent the ball joint end from reinserting. Drive the axle out of the hub with a hammer and a block of wood. Disconnect the ABS sensor wiring connector and retainer (if equipped) Remove the three nuts at the TOP of the strut tower under the hood, then remove the strut, rotor, knuckle AS AN ASSEMBLY. (it is NOT 100% necessary to actually remove the struts, BUT you will have far less stuff in the way/ to deal with when it comes time to drop/reinstall the cradle)
12. Remove the DRIVERS side drive axle by CAREFULLY prying it out of the differential case with a screwdriver. Remove the PASSENGER SIDE axle shaft by driving it out of the intermediate shaft with a block of wood and a hammer. BE CAREFULL not to damage the CV joint boots and DO NOT YANK on the axle shafts.
13. Place your 2 X 4's across the engine compartment from front to rear directly above the lifting "eyes" on the engine, with one end of the board(s) on the upper radiator support, and the other end on the edge of the upper firewall where the rubber hood weather strip runs on the metal lip. TIGHTLY run your cable, chain or rope through the lifting eyes and



around the boards. NOTE: This is ALL that will be supporting the weight of the engine and transaxle shortly (300+ lbs!) GET THIS TIGHT AND SECURE

14. From below, remove the transaxle to engine stiffener plate and clutch inspection cover

15. Remove the intermeadiate shaft to engine block mounting bolts and then CAREFULLY pull the intermeadiate shaft out of the transaxle.

16. Remove BOTH the engine AND transaxle mount(s) to engine cradle mounting bolts. On 91's completely remove the "shock absorber" style transaxle mount also. On 92' and up and ALL DOHC cars, remove the LOWER "dogbone" transaxle and engine mounts. (TOP torque axis mount can STAY ON the engine but all transaxle mounts MUST be disconnected)

17. Confirm there is now NOTHING connecting the engine OR transaxle to the engine cradle. Remove the lower radiator splash shield. TIE THE RADIATOR to the upper radiator support with some stiff/strong twine on the upper sides

18. Loosen but DO NOT REMOVE the 4 engine cradle to space frame bolts. NOTE: These are on VERY tight. Use some PB Blaster and soak them from behind the night before and then use a STRONG high quality 6 POINT socket.

19. Reconfirm that there nothing connecting the engine or transaxle to the engine cradle. That being the case, remove the FRONT cradle to space frame bolts FIRST and allow the cradle to dangle, then remove the rear bolts. THE CRADLE IS HEAVY! (The lower control arms and torque (sway) bar will be coming out with it) It will drag down the hanging exhaust pipe with it, manuever it over the pipe and drag it out from under the FRONT of the car.

20. Remove the lower and upper transaxle to engine bolts. Place a floor jack under the transaxle and lift it SLIGHTLY, this should be enough to start to separate it from the engine, once it starts to separate, pull or carefully pry the two apart while supporting the transaxle with the floor jack. Once it has cleared the engine, lower the floor jack and transaxle out the bottom of the car. NOTE: It may help to separate the engine from the transaxle to lower the rear portion of the engine slightly. I accomplish this by installing my 2 X 4's "on end" and then turning the one closest to the passenger side on its side after the engine cradle is out, effectively lowering that end only by about 3 inches.

Install is the reverse (LOL)

TIPS FOR INSTALL.

Just in front of where the FRONT engine cradle bolts install you will find an alignment hole on each side. Locate a deep well socket that fits TIGHTLY into these holes. Lift the engine cradle into place and LOOSELY install ALL the bolts, then insert your deep well socket mounted in a 3 or 6 in extension into these holes and use it to align the cradle with the holes BEFORE tightening down the front bolts. Failure to do this will result in a severely out of line front end and a car that "dog walks"

When raising the cradle, make SURE the lower radiator support tabs mesh with their holes in the cradle, and that the rubber insulators are still there and that the exhaust pipe is ABOVE the front lip of the cradle..

DO NOT FORCE the transaxle into the engine, or use the bolts to bring them together! When things line up right (including the input shaft splines and clutch disk!) the two WILL mesh right together with no gaps between them what so ever.

Use NEW cotter pins on the ball joint and tie rod end castelated nuts.

Use a TORQUE WRENCH and MAKE SURE to torque the engine cradle, tie rod and axle hub nuts to spec. It is impossible to get a torque wrench on the ball joint nut with the strut installed in it's holder on the knuckle, but you'll need an alignment if you remove the strut from the knuckle., so unless you WANT to pay for an alignment, get it as tight as possible (torque spec is 80ft pds) with an open end or box wrench and install the cotter pin. DO NOT loosen the nut to install the pin.

BE CAREFUL when inserting the intermeadiate shaft and drivers side axleshaft into the transaxle not to damage the seals on the transaxle with the shaft splines.

I STRONGLY RECOMMEND you purchase a Haynes, Chilton or Factory service manual BEFORE undertaking this operation!

...

Old Saturns never die, people KILL them, so check your damn oil!

"Unthinking respect for authority is the greatest enemy of truth." Albert Einstein

Last edited by wolfman; 01-15-2004 at 05:18 AM..

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 Rate the quality of this post and help *wolfman* reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!

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01-15-2004, 10:12 AM

amazinghl

Master Member

Join Date: Jun 2002

Posts: 7,989



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01-15-2004, 04:46 PM #3	
ProDarwin Master Member Join Date: Sep 2002 Location: Winston-Salem Posts: 3,597 ProDarwin's Photos 	 I didn't read all of them, but it looks as though one is from the top (with hoist), and the other is from the bottom (drop cradle). ... -Travis REWARD EXCELLENCE!  Rate the quality of this post and help <i>ProDarwin</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!
01-16-2004, 04:30 PM #4	
wolfman Super Member   Join Date: Jun 2002 Location: Texas Posts: 12,066 wolfman's Photos 	 Read AGAIN...this one is how to remove a MANUAL TRANSAXLE, the other is how to remove the ENGINE from a manual transaxle equiped car.. ... Old Saturns never die, people KILL them, so check your damn oil! "Unthinking respect for authority is the greatest enemy of truth." Albert Einstein REWARD EXCELLENCE!  Rate the quality of this post and help <i>wolfman</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!
04-12-2004, 08:59 PM #5	
wolfman Super Member   Join Date: Jun 2002 Location: Texas Posts: 12,066 wolfman's Photos 	 Addendum. In the original directions I neglected to mention removing the two bolts securing the steering rack to the cradle and the plastic clip holding the brake line to the rear cradle crossmember. Do this BEFORE lowering the cradle. ... Old Saturns never die, people KILL them, so check your damn oil! "Unthinking respect for authority is the greatest enemy of truth." Albert Einstein REWARD EXCELLENCE!  Rate the quality of this post and help <i>wolfman</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!
01-31-2005, 10:27 PM #6	
JTB New Member Join Date: Jan 2005 Posts: 8	 Re: S-Series Manual Transaxle Removal thanks this helps out. It sounds like its very similiar to the way the one came out of the Regal I did. a lot of work, and not much fun, but oh well whats a guy to do, can't junk the Saturn, yet. REWARD EXCELLENCE!  Rate the quality of this post and help <i>JTB</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!
02-01-2005, 03:51 AM #7	
Razorbak Master Member  Join Date: Aug 2004 Location: Chicagoland Posts: 2,860 Razorbak's Photos  1996 SL2	 Re: S-Series Manual Transaxle Removal Nice write-up, wolfman. Saw it today for the first time. Thanks for posting. REWARD EXCELLENCE!  Rate the quality of this post and help <i>Razorbak</i> reputation points. Click the reputation button near the bottom left corner of this message box. Thank you!



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